

MAGNETIC SHIELD FOR INTEGRATED CIRCUIT PACKAGINGRelated Application

[0001] This application is a divisional application of U.S. Application No. 10/050,339, now Patent No. 6,906,396, entitled "MAGNETIC SHIELD FOR INTEGRATED CIRCUIT PACKAGING," filed January 15, 2002.

Field of the Invention

[0002] The present invention relates to magnetic shielding for integrated circuits and, more particularly, to magnetic shielding for integrated circuits having magnetic materials used therein for which protection from stray external magnetic fields is desired.

Background of the Invention

[0003] Magnetic materials are used, for example, in magnetic cell memories and magnetic field sensors. In random access magnetoresistive memories, data is stored by applying magnetic fields and thereby causing a magnetic material in a cell to be magnetized into either of two possible memory states. The information stored in the memory is contained in the orientations of the magnetization vectors of the magnetic material layers used in each memory cell. Such memory cells exhibit a pronounced decrease in electrical resistance when an applied magnetic field brings the magnetization vectors in different layers into alignment. Recalling data is accomplished by sensing resistance changes in the cell. The cells can be written or erased by applying magnetic fields created by passing currents through conducting lines external to the magnetic structures, or through the magnetic structures themselves.

[0004] There are often undesirable magnetic fields in and about the device, which are generated either as part of the device operation or from external sources. Such fields can have significant effects on the magnetization of the magnetic thin film. The field can contribute to a loss of information or to storage of erroneous information in the magnetic memory cells. Thus, magnetic memory cells function best when they are protected from external magnetic field disturbances.